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EXAMINER

NGUYEN, HAI V

ART UNIT	PAPER NUMBER
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2142

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/842,604	Applicant(s) HE, HAIXIANG	
	Examiner Hai V. Nguyen	Art Unit 2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the communication received on 21 January 2005.
2. Claims 1-28 are presented for examination.

Response to Arguments

3. Applicant's arguments received on 21 January 2005 have been fully considered but they are deemed not to be persuasive and moot in view of new ground of rejection as follows:

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 10-17 are rejected under 35 U.S.C. 101 because the claimed invention is non-functional descriptive material and is directed to non-statutory subject matter. Claims 10-17 describe "the apparatus comprising a multicast database processing module", which when read in light of specification amounts to nothing more than computer software void of a computer readable medium. See MPEP 2106(IV)(B)(1).
6. Claims 26-28 are rejected under 35 U.S.C. 101 because the claimed invention is non-functional descriptive material and is directed to non-statutory subject matter. Claims 26-28 describe "the apparatus comprising means for ...", which when read in light of specification amounts to nothing more than computer software void of a computer readable medium. See MPEP 2106(IV)(B)(1).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 8, 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 8 recites the element of "wherein the set of network devices includes no more than one of the plurality of network devices". It is unclear whether the set of network devices includes "no device" or includes at least one of said plurality of devices.

10. Claim 9 recites the limitation ", the set of multicast information ... " in claim 9. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Haggerty et al.** U.S. patent no. **6,331,983 B1** in view of **Cheng et al.** U.S. provisional application publication # **60/243,809**.

13. As to claim 1, Haggerty discloses a method of producing a multicast tree for a multicast in a network, the network including a plurality of network devices

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(switches/routers) that are members of the multicast, a set of the network devices each including a multicast database that is protocol independent (*Haggerty, This mechanism of "signal out and connect back" works equally well for dense or sparse groups. Note that the packet distribution tree (the point-to-multipoint connection that gets programmed through the switches on the path) is a second tree, independent of the spanning tree used for the multicast switch protocol messaging. Also note that the package distribution tree can add branches when new receivers join, without changing the rest of the tree. This stability is useful in supporting RSVP, which expects to periodically refresh reservations up the same branch that the original path messages went down on, col. 14, lines 55-65; col. 17, line 66 – col. 18, line 2; col. 8, lines 37-56*), the method comprising:

locating the multicast database within each of the set of the network devices (*Haggerty, col. 20, line 28 – col. 21, line 44*);

retrieving multicast information from each located multicast database (*Haggerty, col. 20, line 28 – col. 21, line 65*); and however, Haggerty does not explicitly disclose tracing the retrieved multicast information across the plurality of network devices to form the multicast tree. Thus, the artisan would have been motivated to look into the related networking art for potential system for implementing tracing the retrieved multicast information across the plurality of network devices to form the multicast tree.

In the same field of endeavor, Cheng, related Hierarchical Level-Based Internet Protocol Multicasting, discloses in an analogous art, discloses in sections 4.1 and 4.2

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on pages 6-8 describing local host joining a group and establishing the HLIM multicast tree (*Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*).

Accordingly, it would have been obvious to one of ordinary skill in the networking art at the time the invention made to have incorporated Cheng's teachings of finding multicast information to establish the multicast tree (*Cheng, pages 6-9*) with the teachings of Haggerty, for the purpose of *maintaining the tree dynamically against host mobility, network mobility and network failure (Cheng, page 4, section 3)*. Haggerty also suggests that enabling the efficient transmission of multicast traffic in a switched network (*Haggerty, col. 7, lines 5-20*).

14. As to claim 2, Haggerty-Cheng discloses, wherein the multicast includes a root node, the retrieved multicast information being traced from the root node, the root node being one of the plurality of network devices (*Cheng, pages 4-9, Figs. 3, 44, 4.1, 5.1*).

15. As to claim 3, Haggerty-Cheng discloses, wherein the network implements the Internet Protocol (*Haggerty, IP multicasting, col. 3, lines 1-50; Cheng, page 4, section 3*).

16. As to claim 4, Haggerty-Cheng discloses, wherein the set of network devices includes an unicast database having network information, the unicast database being protocol independent (*Haggerty, col. 8, lines 37-56; col. 14, lines 55-65; col. 17, line 66 – col. 18, line 2; col. 19, lines 21-32*), the method further including: locating the unicast database within each of the set of network devices (*Haggerty, col. 20, line 28 – col. 21, line 44*).

retrieving network data from each unicast database (*Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*); and

using the retrieved network data to form the multicast tree (*Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*).

17. As to claim 5, Haggerty-Cheng discloses, wherein each multicast database is a management information base (*Haggerty, col. 20, lines 14-56; Cheng, group database*).

18. As to claim 6, Haggerty-Cheng discloses, wherein at least one of the plurality of network devices includes a protocol dependent multicast database, the multicast tree being formed free from any data retrieved from the protocol dependent multicast database (*Haggerty, col. 8, lines 37-56; col. 14, lines 55-65; col. 17, line 66 – col. 18, line 2; col. 19, lines 21-32; Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*).

19. As to claim 7, Haggerty-Cheng discloses, wherein the retrieved multicast information is traced by an application incorporating the Simple Network Management Protocol (*Haggerty, col. 20, lines 14-56*).

20. As to claim 8, Haggerty-Cheng discloses, wherein the set of network devices includes no more than one of the plurality of network devices (*Haggerty, col. 8, lines 37-56; col. 14, lines 55-65; col. 17, line 66 – col. 18, line 2; col. 19, lines 21-32; Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*).

21. As to claim 9, Haggerty-Cheng discloses, wherein the set of network devices includes a first network device and a second network device, each multicast database including a set of multicast data, the set of multicast information being different in the multicast database in the first network device than the set of multicast information in the

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multicast database in the second network device (*Haggerty, col. 8, lines 37-56; col. 14, lines 55-65; col. 17, line 66 – col. 18, line 2; col. 19, lines 21-32; Cheng, pages 6-9, sections 4.1, 4.2, 4, 3, 5*).

22. Claim 10 is corresponding apparatus claim of claim 1; therefore, it is rejected under the same rationale as in claim 1.

23. Claims 11-17 are similar limitations of claims 2-8; therefore, they are rejected under the same rationale as in claims 2-8.

24. Claim 18 is corresponding computer readable medium claim of claim 1; therefore, it is rejected under the same rationale as in claim 1.

25. Claims 19-25 are similar limitations of claims 2-8; therefore, they are rejected under the same rationale as in claims 2-8.

26. Claim 26 is corresponding apparatus in means plus function claim of claim 1; therefore, it is rejected under the same rationale as in claim 1.

27. Claims 27-28 are similar limitations of claims 4-5; therefore, they are rejected under the same rationale as in claims 4-5.

Response to Arguments

28. Applicant's arguments received on 21 January 2005 have been fully considered but they are not persuasive.

29. In the remark, Applicant argued in substance that:

Point (A), The prior art does not disclose "a set of network elements each including a protocol independent multicast database" in claims 1, 10, 18, 26.

As to point (A), Haggerty, discloses, "This mechanism of "signal out and connect back" works equally well for dense or sparse groups. Note that the packet distribution tree (the point-to-multipoint connection that gets programmed through the switches on the path) is a second tree, independent of the spanning tree used for the multicast switch protocol messaging. Also note that the package distribution tree can add branches when new receivers join, without changing the rest of the tree. This stability is useful in supporting RSVP, which expects to periodically refresh reservations up the same branch that the original path messages went down on, (col. 14, lines 55-65); currently the spanning tree is kept only as a database and packets are forwards through host code in each switch (col. 17, line 66 – col. 18, line 2); A second embodiment is directed to a router/switch interface, for example enabling a switched-based subnet to send and receive multicast traffic to and from a router-based Internet. In this embodiment, a local switch determines if it has an attached local router, and if so, the local switch joins all or a subset of multicast group addresses. For example, this may be accomplished by maintaining a database of receiving ports in each switch, for various multicast addresses. The receiver database would include the multicast group address, which may be a wildcard designating all multicast groups, and the port on which the router is attached for sending or receiving multicast traffic (col. 8, lines 37-56)"

Point B, there are no motivation or suggest to combine the prior art.

As to point (B), In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce

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the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, accordingly, it would have been obvious to one of ordinary skill in the networking art at the time the invention made to have incorporated Cheng's teachings of finding multicast information to establish the multicast tree (*Cheng*, pages 6-9) with the teachings of Haggerty, for the purpose of *maintaining the tree dynamically against host mobility, network mobility and network failure* (*Cheng*, page 4, section 3). *Haggerty also suggests that enabling the efficient transmission of multicast traffic in a switched network* (*Haggerty*, col. 7, lines 5-20). (also see claim 1)

30. Further references of interest are cited on Form PTO-892, which is an attachment to this action.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai V. Nguyen whose telephone number is 571-272-3901. The examiner can normally be reached on 6:00-3:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Harvey can be reached on 571-272-3896. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hai V. Nguyen
Examiner
Art Unit 2142

HN

Jack Han
JACK HAN
SUPERVISOR, PATENT EXAMINER